IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of **Jeffery M. Enright, et al.**	)	
Application No.: **09/414,290**	)	Art Unit 3628
Confirmation No.: **3095**	)	
Filed: **October 7, 1999**	)	Patent Examiner David Vincent
Title: **Remote Viewing of ATM Transaction Records**	)	

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION PURSUANT TO 37 C.F.R. § 1.131

Sir:

We, Jeffery M. Enright and Roy Hathaway, hereby declare as follows:

1. At all times relevant we were employed with Diebold, Incorporated ("Diebold") the Assignee of the above-identified patent application. We are authorized on behalf of Diebold to present this Declaration.

2. We are joint inventors of the invention set forth in the above-identified patent application and have personal knowledge of the facts set forth herein. We are the sole inventors of the subject matter described and claimed in at least claims 1, 38, and 41 thereof.

3. At a time prior to March 19, 1998 we conceived of an invention which included an automated banking machine, such as an automated teller machine ("ATM") that included transaction function devices (e.g., a currency dispenser). A camera would be located adjacent the ATM. The camera would produce camera signals corresponding to an image of a person located adjacent the ATM. Image data corresponding to the image of the person would be stored (via a computer) in a data store responsive to operation of a selected transaction function device of the ATM. A computer terminal having a display device would be remotely located from the ATM. The terminal would be able to retrieve image data stored in the data store via a network. The terminal would be able to display images on the display device corresponding to retrieved image data. The retrieval date of image data could be later than the storage date of the image data. This idea was conceived of by us in the course of our employment with Diebold.

4. After conceiving of this invention, we and other eventual inventors attended project meetings at Diebold in Canton, Ohio prior to March 19, 1998 to discuss the making of an apparatus in accordance with our conceived invention.

5. Prior to March 19, 1998, we and other inventors at Diebold in Canton, Ohio prepared a description of apparatus features in accordance with the invention. An example of evidence of the inventive apparatus features is shown in the attachment labeled as Exhibit A. Dates in Exhibit A which have been deleted, are all prior to March 19, 1998.

Exhibit A shows the apparatus capabilities relating to a digital video recorder (DVR) associated with an ATM (page 1). The DVR is connected to at least one camera and can use motion detection or ATM ExpressBus (internal ATM signals that correspond to transaction functions) monitoring to begin capture of data that corresponds to images (pages 3, 13, 14). The image data can be stored (and dated) along with ATM transaction data (pages 3, 13, 14). The

image data can be retrieved from storage via a browser/network arrangement (pages 3, 13, 14). Image capture can also be based on soft alarms, including those noted from monitoring high side ATM communications (page 4), which are the communications between the ATM and a remote host computer that authorizes transactions at the ATM.

6. Evidence for design of the inventive apparatus is shown in the detailed development outline attached as Exhibit B. The date assigned to Exhibit B (which was deleted) was prior to March 19, 1998. The dates mentioned in Exhibit B have also been deleted. Exhibit B documents hardware and software capabilities for the inventive apparatus. Exhibit B also shows a detailed schedule for reducing to practice the inventive apparatus. The dates for the building of the first, second and third preproduction apparatus for testing purposes (line IDs 92, 120 and 145, respectively) and the "Alpha" and "Beta" tests of the inventive apparatus (line IDs: 163 and 165, respectively) were scheduled for completion, and in fact were successfully completed, prior to March 19, 1998. All dates on line IDs 92, 120, 145, 163 and 165 which have been deleted, are prior to March 19, 1998.

7. Exhibit C shows an e-mail communication involving the herein Declarants. The date of the e-mail and any date mentioned therein (which have all been deleted) are all prior to March 19, 1998. Exhibit C refers to the inventive apparatus as "DVR." Exhibit C further shows that development of the inventive apparatus achieved such an advanced stage that parts for 30 prototypes were being ordered.

8. Exhibit D shows specification details for the inventive apparatus with questions from the Diebold SQA (Systems Quality Assurance) function related to testing the inventive apparatus for performance and reliability. The date of Exhibit D, which has been deleted, was prior to March 19, 1998. Exhibit D shows the inventive DVR system (apparatus) including an

ATM, cameras, DVR, and a remote terminal (e.g., page 2; Figure 1). The DVR includes web server software. The DVR can monitor an ATM, capture and store digital images, and allow the stored images to be viewed by a remote terminal using web browser software.

Exhibit D also shows that the DVR can monitor or eavesdrop on the ATM with regard to transaction information (e.g., RS485 or RS232 interfaces; page 9). The DVR can also capture and locally process digital images (page 12). The processing can include the linking of transaction data and image data. The DVR can also store linked data as records in a database (page 12). Image capture can be triggered based on motion detection adjacent the ATM (pages 15, 17, 21) or hard/soft alarms (page 17). A trigger for image capture can make use of an ExpressBus (internal ATM signals) interface or Hi-side (ATM to remote host computer) communications. Thus, certain transaction-related messages to a remote host computer in certain message formats (e.g., Diebold 911/912, NCR Native, IBM 473x) sent by an ATM can trigger image capture (page 20).

Exhibit D further shows that the DVR can communicate (e.g., via RS232, LAN, Internet) with a remote viewing terminal (page 19). Retrieval and playback display of a stored image (section 5.2.13) can be selected based on the image's link to other stored data, including an associated date/time, transaction data, a camera number, or account data (page 22).

9. Prior to March 19, 1998 while working at a facility of Diebold, in Canton, Ohio USA, we made (or oversaw and directed the making of), operated, and performed testing on system features and components and the operation thereof, as recited in at least claims 1, 38 and 41 of the above-identified patent application.

10. Testing conducted prior to March 19, 1998 was determined to be successful, and established that the invention that is recited in at least claims 1, 38, and 41 of the above-

identified patent application would work for its intended purposes. The successful testing included the apparatus features recited in at least claims 1, 38, and 41. That is, the successfully tested system comprised an apparatus that at least included:

> A camera adjacent an ATM. A computer connected with the ATM and the camera. The computer included a server in connection with a data store. The computer could cause image data corresponding to signals captured by the camera to be stored in the data store responsive to the ATM carrying out a transaction function. The server and a remote user terminal were in connection with a communication network. The user terminal included a browser and a display device. The user terminal could communicate over the network with the server through the browser to retrieve image data in the data store for output through the display device. The image data could be displayed subsequent to its storage.

11. Exhibit E shows that a successful demonstration of the actual DVR system product (including image retrieval capability) was carried out at a facility of Diebold. The date of Exhibit E (which has been deleted) was prior to March 19, 1998. Exhibit E also refers to another DVR system demonstration for the Bank of Hawaii which was scheduled for and which was successfully conducted to demonstrate the inventive apparatus of at least claims 1, 38 and 41 prior to March 19, 1998.

12. Exhibit F shows a request to pursue patent protection for the DVR system. Exhibit F refers to a specific date on which occurred a Patent Investigation Meeting. All dates in Exhibit F have been deleted. The referred to date of the Meeting was prior to March 19, 1998.

Exhibit F reiterates features of the DVR system (which was given the name "AccuTrack"). These features include ATM transaction based triggers for image capture;

storage of captured images; and remote access to these stored images.

13. As can be seen from Exhibits A-F, the invention recited in at least claims 1, 38, and 41 was completed by being conceived and reduced to practice in the U.S. prior to March 19, 1998. That is, the successful design, testing, and operation of the invention recited in at least claims 1, 38, and 41 resulted in an *actual reduction* to practice in the U.S. prior to March 19, 1998. Thus, invention has been established prior to March 19, 1998 for the recited subject matter of at least claims 1, 38, and 41.

14. Although the date of the invention recited in at least claims 1, 38, and 41 has above already been established as being prior to March 19, 1998 as discussed above, the process of legally protecting the invention continued. As a result of the Meeting (which occurred prior to March 19, 1998), the subject matter corresponding to at least recited claims 1, 38, and 41 was for example filed in U.S. patent application number 60/103,731 on October 9, 1998.

The filing of application number 60/103,731 constitutes an example of a *constructive reduction* to practice of the invention claimed in at least claims 1, 38, and 41. Thus, conception of the invention (recited in at least claims 1, 38, and 41) prior to March 19, 1998, coupled with due diligence leading to the filing of the invention in application number 60/103,731, additionally establishes that the invention is prior to March 19, 1998.

15. We each hereby declare that all statements herein of our own knowledge are true, that all statements made on information and belief are believed to be true, and that the statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both (18 U.S.C.§1001), and may jeopardize the validity of the application or any patent issuing thereon.

Jeffery M. Enright

01-10-06
Date

Roy Hathaway

Date

	Roy Hathaway
Jeffery M. Enright	Roy Hathaway
	1-5-06
Date	Date

EXHIBIT A

DIEBOLD

DIGITAL VIDEO RECORDER

TIME & MATERIALS ESTIMATE

FOR PHASE #1

BRANCH & INTERNAL SYSTEMS

SECRET
INTERNAL DIEBOLD USE ONLY
This document contains proprietary information that shall be distributed or routed only within Diebold's facilities, except with written permission from Diebold.

1. SCOPE

This document will discuss the time (man-power and duration) and materials (contract money is included in materials) needed for the Phase #1 development of the **Digital Video Recorder** project. This will be simultaneous development of the **Branch** and **ATM Internal DVRs**.

This document is composed of the following sections:

- Section #2 describes the schedule and how it is broken up
- Section #3 is a breakdown of the task to be done
- Section #4 is a breakdown of the functionality included in each build
- Section #5 is a breakdown of the manpower needed
- Section #6 is an estimate of the materials needed for development
- Section #7 is a rough estimate of the target raw cost for the **Branch DVR** and the **ATM Internal DVR**
- Section #8 is a breakdown of the amount of money needed for development
- Section #9 is a summary of this document

2. SCHEDULE

The Digital Video Recorder project will be broken into three phases. Each phase represents a level of priority from the Marketing Meeting inputs which are specified in the Product Requirements Specification. Phase #1 will be all *high priority* features (as described within this document), Phase #2 will be *priority* and Phase #3 will be the remainder. Phase #2 and #3 will be described separately in later documents.

Each phase will be broken into builds. Each build will be a testable product, but will ***not*** be released. The products will be released at the completion of each phase.

Build #1 of Phase #1 will be targeted for a PC platform. Part of Build #2 will be porting Build #1 to a PC platform running OS/2.

Attached at the end of the document is a more detailed breakdown of the schedule.

3. TASKS

The tasks which will be completed within this phase of the DVR Project are described in this section.

Hardware Evaluation and Hardware Finalization - evaluation and selection of all hardware necessary for the **Branch** and **ATM Internal DVRs.** At the completion of this task, all hardware will be documented for the **Branch** and **ATM Internal DVR's.**

Enclosure Design and Regulatory Testing - the design and testing of the **Branch DVR** enclosure. At the completion of this task, the **Branch DVR** enclosure will be completed and approved by the testing agencies.

Software Component Evaluation and Selection - evaluation and selection of all off-the-shelf software components necessary for the **Branch** and **ATM Internal DVRs.** Software needed that will not run on the ATM platform must have a separate package selected (e.g. Web Server, Database, etc.). At the completion of this task, all software components will be selected and documented for the **Branch** and **ATM Internal DVR's.**

High Level System Design - this is the preliminary design done on the system. Outputs from this task will be Use Cases, Preliminary Domain Object Model, Scenario Diagrams, State Transition Diagrams and High Level System Diagrams.

Software Design and Evolution - design, code and testing of the software needed for the **Branch** and **ATM Internal DVRs.**

SQA - all SQA testing as well as Jim Lowry facilitating biweekly and an SQA member attending design reviews.

Alpha and Beta Testing - an Alpha Test will be performed internally and a site will be selected for a Beta Test.

Documentation - the Technical Publications group will be responsible for writing the Installation, Operator's Guide and Service Manuals for the **Branch** and **ATM Internal DVR's.**

Software Release - process of releasing the software for the **Branch** and **ATM Internal DVR's.** At the completion of this task, the software will be released and available on the market.

Sales Tools - this task will be generating a set of demo disks for the sales force to demonstrate the products to potential customers.

4. FUNCTIONALITY

The functionality of what each build will include is listed below.

Build #1 of the **DVR** will include the following functionality:

- Targeted platform will be a standard PC
- Connection to unit using an Internet Browser (such as Netscape) over a dial-up line (modem):
  - Limited configuration
  - Image retrieval
  - Limited quick search capability
  - Single camera playback
  - On-line help
- Images stored on removable media with transaction data
- Expressbus monitoring from a single ATM
- Soft alarms from expressbus monitoring
- Image security
- Motion detection
- Programmable number of images
- Local configuration for implemented features
- Diagnostics for implemented features
- English language

Build #2:

- Build #1 running on ATM
- DLL for **ATM Internal DVR**
- Connection to unit over a network connection (either Ethernet or Token-Ring, whichever is not done here will be done in Build #3) to perform following operations on **Branch DVR**:
  - More configuration options
  - View alarm logs
  - Multi-camera playback
  - Image and data removal linked to date
  - User defaults
  - Additional quick search capability
  - System security (users/passwords)

- Image printing

- Support multiple cameras on **Branch DVR**
- Hardware alarms with alarms logged to a log file
- Image compression in software
- Vary compression rate on alarm condition
- Prealarm image storage
- Camera/event scheduling
- Internal clock synchronized with ATM clock
- Local disk level warning
- Log of non-recording times maintained in a log file
- Single camera playback on CCTV monitor on **Branch DVR**
- High side communications monitoring from a single ATM (one protocol) on **Branch DVR**
- Soft alarms from high side monitoring on **Branch DVR**
- E-Mail alarm conditions
- Additional local configuration for build #2 features
- Additional diagnostics for build #2 features

Build #3:

- Connection to unit using a direct serial connection and the network connection not done in Build #2:
  - Full configuration
  - View multiple alarm logs
  - Full diagnostics done remotely
  - Remote software updates
  - Default program "scripts" for niche markets
  - Full search capability
  - Full system security (users/passwords)
  - Image and data printing
- Network connection for **ATM Internal DVR**
- Integration with custom enclosure for **Branch DVR**
- Indicators on enclosure

- Programmable video output
- Additional camera support
- Additional alarm support
- Partitioning of the storage media
- Automatic daylight savings time option
- Power loss E-Mail
- Multiple ATM monitoring (high and low sides) for **Branch DVR**
- Onsite verification of operation
- All configuration complete - local and remote
- All diagnostics complete - local and remote

5. MANPOWER

This section defines the manpower breakdown needed for Phase #1 of the **Digital Video Recorder** Project.

- 4 full-time Software Engineers for the duration of the project, 1 Software Engineer 50% initially, 65% for Build #1 and full-time for the remainder of the project.
- 2 co-ops utilized at 50% during the selection of the hardware for the **Branch DVR**.
- 1 draftsman utilized at 25% for documenting the release of the hardware and software.
- 1 Mechanical Engineer to design the Branch enclosure.
- Interbold assistance in regulatory testing, ATM Internal hardware integration and ATM Internal software development/integration. Interbold will also be responsible for making modifications to the ATM software to communicate with the **ATM Internal DVR**.
- 1 SQA participant in the role as the team's facilitator.
- 2 SQA individuals for testing.
- 1 Technical Writer for documentation.

A more detailed breakdown of the required manpower follows in the appendix.

6. MATERIALS ESTIMATE

This table breaks down materials needed for the development of the Branch DVR.

BRANCH MATERIALS ESTIMATE			
MATERIAL	**QUANTITY**	**PRICE**	**TOTAL COST**
Power Supply	5	$100	$500.00
Motherboard	5	$500	$2500.00
Removable Media	5	$500	$2500.00
Data Cartridges	10	$100	$1000.00
Floppy Drive	5	$20	$100.00
Hard Drive	5	$500	$2500.00
Cables		$300	$300.00
Buttons, LED's, etc.		$200	$200.00
LAN Card	5	$100	$500.00
Modem	5	$100	$500.00
Frame Grabber Card	5	$500	$2500.00
RS-485 Card	5	$250	$1250.00
RS-232 Card	5	$100	$500.00
Video Switcher	5	$100	$500.00
Compression Card	3	$300	$900.00
Digital I/O Card	5	$200	$1000.00
SVGA Monitor	3	$500	$1500.00
Keyboard / Mouse	4	$25	$100.00
Operating System	5	$100	$500.00
Compression Libraries	5	$250	$1250.00
Web Server S/W	5	$250	$1250.00
Enclosure Prototypes	4	$2500	$10000.00
Cameras	10	$300	$3000.00
CCTV Monitor	3	$250	$750.00
Video Printer	1	$500	$500.00
Laser Printer	1	$500	$500.00
		BRANCH TOTAL	$36600.00

This table breaks down the materials needed for the development of the **ATM Internal DVR**.

ATM INTERNAL MATERIALS ESTIMATE			
MATERIAL	**QUANTITY**	**PRICE**	**TOTAL COST**
Removable Media	3	$500	$1500.00
Data Cartridges	5	$100	$500.00
LAN Card	3	$100	$300.00
Modem	3	$100	$300.00
Frame Grabber Card	5	$500	$2500.00
Web Server S/W	5	$500	$2500.00
LAN Hub	3	$250	$750.00
DIGITAL VIEWING SYSTEM TOTAL			$8350.00

This table breaks down the materials needed for SQA testing.

SQA MATERIALS ESTIMATE			
MATERIAL	**QUANTITY**	**PRICE**	**TOTAL COST**
Branch DVR	2	$4000	$8000.00
Cameras	3	$300	$900.00
CCTV Monitor	2	$250	$500.00
		SQA TOTAL	$9400.00

This table breaks down the contract and materials needed for regulatory testing.

REGULATORY TESTING ESTIMATE			
MATERIAL	**QUANTITY**	**PRICE**	**TOTAL COST**
Branch DVR	3	$4000	$12000.00
UL Electrical Safety	1	$2500	$2500.00
UL Performance	1	$5000	$5000.00
CSA Electrical Safety	1	$2500	$2500.00
FCC	1	$2500	$2500.00
CE Electrical Safety / Telecommunications	1	$12500	$12500.00
		REGULATORY TOTAL	$37000.00

8. PHASE #1 TIME & MATERIAL

Breakdown	Material & Contract	Labor	Total
Hardware Evaluation	$39,500	$46,000	$85,500.00
High Level Design & Build #1	$5,500	$150,000	$155,500.00
Build #2 & Build #3	$0	$192,000	$192,000.00
Sales Tools	$0	$12,000	$12,000.00
Branch Enclosure Design & Regulatory Testing*	$70,000	$5000	$75,000.00
SQA	$9,500	$27,000	$36,500.00
Technical Publications	$0	$23,500	$23,500.00
TOTAL for PHASE #1	$124,500.00	$455,500.00	$580,000.00

* - includes $33,000 for mechanical design of enclosure

9. SUMMARY

Target products: **Branch DVR** and **ATM Internal DVR**

Target date:

Target raw cost: **Branch DVR** ***$2500.00***

ATM Internal DVR ***$1000.00***

Target features: ATM Internal DVR

- Hardware alarm input & log file
- Communications via dial-up or network
- Remote software updates
- Remote configuration and image review
- E-mail alarms for low disk space and alarm conditions
- Image resolution equal or better than VCR
- Picture quality sufficient for fraud investigation
- Image security
- Image motion detection
- Transaction data stored with image
- Clock synchronized with ATM
- Removable storage
- Remote and local diagnostics
- Option for automatic daylight savings
- System security

Branch DVR

- Hardware alarm input & log file
- Compression rate can vary during alarm condition
- Communications via dial-up, direct serial connect or network
- Remote software updates
- Remote configuration and image review
- E-mail alarms for low disk space and alarm conditions
- Minimum of 4 composite video inputs
- Image resolution equal or better than VCR
- Picture quality sufficient for fraud investigation
- Image security
- Image motion detection
- Programmable video output
- Transaction data stored with image
- Clock synchronized with ATM
- ExpressBus and High-Side comm. monitoring for 2 ATM's
- Removable storage
- Remote and local diagnostics
- Local configuration using video output
- Option for automatic daylight savings
- System security

ID	Task Name	Start	Finish	Hours	Resource Names	ter
1	***DVR Design & Development***			10209.55h		
2	**PHASE #1**			10209.55h		
3	**BRANCH DVR**			1700h		
4	**Hardware evaluation**			520h		
5	Power supply			40h	Person #1[0.25]	
6	Motherboard			40h	Person #1[0.25]	
7	Removable media			40h	Person #1[0.5]	
8	Hard drive			20h	Person #1[0.5]	
9	Floppy drive			20h	Person #1[0.5]	
10	Digital I/O			40h	Person #1[0.5]	
11	Cables			40h	Person #1[0.5]	
12	Buttons, LEDs, etc.			40h	Person #2[0.5]	
13	LAN card			40h	Person #2[0.5]	
14	Modem			40h	Person #2[0.5]	
15	RS-485 card			40h	Person #2[0.5]	
16	Frame Grabber			80h	Person #2[0.5]	
17	Video Switcher			40h	Person #2[0.5]	
18	**Hardware finalization**			252h		
19	Select hardware			132h	S/W #1[0.15]	
20	Hardware documentation			120h	Drafting #1[0.25]	
21	*Hardware released*			*0h*		
22	**Enclosure design**			544h		
23	Enclosure concept			192h	Mechanicial Engineer[0.8]	
24	Design enclosure			256h	Mechanicial Engineer[0.8]	
25	Prototype			96h	Mechanicial Engineer[0.8]	
26	*Protype available for test*			*0h*		
27	**Enclosure regulatory testing**			108h		
28	FCC testing			24h	S/W #5[0.05]	
29	UL/CSA testing			24h	S/W #5[0.05]	
30	CE testing			60h	S/W #5[0.1]	
31	*Regulatory testing complete*			*0h*		
32	**Software component evaluation**			276h		
33	Web server			0h		
34	Database			0h		
35	Image security			0h		
36	Image compression			0h		
37	Operating system			0h		
38	Select components			180h	S/W #1[0.15],S/W #2[0.15],S/W #3[0.15],S/W #4[0.15],S/W #5	

ID	Task Name	Start	Finish	Hours	Resource Names	ter
39	Document components			96h	S/W #1[0.05],S/W #2[0.05],S/W #3[0.05]	
40	*Software components documented*			*0h*		
41						
42	**ATM (Internal)**			286h		
43	Hardware evaluation			80h	Person #1[0.25]	
44	**Hardware finalization**			126h		
45	Select hardware			36h	S/W #2[0.15]	
46	Document hardware			90h	Drafting #1[0.25]	
47	*Hardware released*			*0h*		
48	Hardware Integration			0h		
49	*Hardware Integration Complete*			*0h*		
50	**Software component evaluation**			80h		
51	Web server			0h		
52	Database			0h		
53	Select components			48h	S/W #3[0.1],S/W #4[0.1]	
54	Document components			32h	S/W #4[0.05]	
55	*Software components documented*			*0h*		
56	Software modifications to ATM			0h		
57	Software Integration			0h		
58	*Software Complete*			*0h*		
59	Interbold Testing			0h		
60	*Interbold Testing Complete*			*0h*		
61						
62	**Software design and evolution**			6259.97h		
63	**High level system design**			588h		
64	Use cases			0h		
65	Preliminary domain object model			0h		
66	Design Review			0h		
67	Scenarios			0h		
68	Object interaction diagram			0h		
69	State transition diagrams			0h		
70	System diagram			0h		
71	High level design			588h	S/W #1[0.5],S/W #2[0.5],S/W #3[0.55],S/W #4[0.55],S/W #5[0.	
72	*High level design complete*			*0h*		
73	**Build #1**			2240h		
92	*Build #1 complete*			*0h*		
93	**Build #2**			1715.98h		
120	*Build #2 complete*			*0h*		

ID	Task Name	Start	Finish	Hours	Resource Names	ter
121	Build #3			1715.98h		
145	*Build #3 complete*			*0h*		
146						
147	**SQA**			1051.58h		
148	Status Meetings			37.6h	SQA #1[0.02]	
149	Build #1 design reviews			44h	SQA #2[0.05]	
150	SQA build #1 testing			62h	SQA #2[0.8],SQA #3[0.8]	
151	*Build #1 test complete*			*0h*		
152	Build #2 design reviews			20h	SQA #2[0.05]	
153	SQA build #2 testing			124h	SQA #2[0.8],SQA #3[0.8]	
154	*Build #2 test complete*			*0h*		
155	Build #3 design review			18h	SQA #2[0.05]	
156	SQA build #3 testing			186h	SQA #2[0.8],SQA #3[0.8]	
157	*Build #3 test complete*			*0h*		
158	Final software modifications			559.98h	S/W #1[0.4],S/W #2[0.8],S/W #3[0.8],S/W #4[0.8],S/W #5[0.7]	
159	*Software complete*			*0h*		
160						
161	**Alpha & Beta Testing**			0h		
162	Alpha			0h		
163	*Alpha test completion*			*0h*		
164	Beta			0h		
165	*Beta test completion*			*0h*		
166						
167	**Documentation**			560h		
168	**Branch**			280h		
169	Installation			80h	Tech. Writer[0.5]	
170	Operator's Guide			80h	Tech. Writer[0.25]	
171	Service and parts			120h	Tech. Writer[0.25]	
172	**Internal ATM**			280h		
173	Installation			80h	Tech. Writer[0.5]	
174	Operator's Guide			80h	Tech. Writer[0.25]	
175	Service and parts			120h	Tech. Writer[0.25]	
176						
177						
178						
179						
180	**Software Release**			96h		
181	Branch release - preliminary			64h	S/W #1[0.4]	

ID	Task Name	Start	Finish	Hours	Resource Names	ter
182	Branch release - final			32h	S/W #1[0.8]	
183						
184	**Sales Tools**			256h	S/W #2[0.8],S/W #3[0.8]	
185						
186	***Phase #1 Completion and Release***			0h		

To: Jeff Enright@ElecSecEng@Diebold
Cc:
Bcc:
From: Roy Hathaway@ElecSecEng@Diebold
Subject: Status Report
Date: 8:39:19 EDT
Attach:
Certify: N
Priority: Normal
Defer until:
Expires:
Forwarded by:

EXHIBIT C

WEEKLY REPORT
Week Ending

CAU:

1. Completed review of first draft of the installation manual for the universal kit. Began review of manual for Smart and Dumb RTU.

DVR:

2. Had design review of the VAC board. Investigating timing issues on VAC board.
3. Les has started work on ordering parts for prototypes. 30 sets of parts will be ordered.
4. Received lay-out of VIA board. VIA board had a few mistakes, but overall looked pretty good.
5. We are approximately 1 to 1 1/2 weeks behind schedule. The designer at Merriwether is out of town Friday and Monday so two days will be lost. Merriwether has stated we may have VIA boards on the 14th and possibly VAC boards on the 17th.

NIA:

6. Received another call from Randy Mauldin regarding PROMs for First American. Chuck Devore will handle this problem.

MST:

7. Received a CVQ for another source for PAL used on ST, ESP and Comm Processor board. Jeff Adams will investigate.

Roy

EXHIBIT D

DIEBOLD

DIGITAL VIDEO RECORDER FUNCTIONAL SPECIFICATION

BRANCH UNIT SPECIFICATION

SECRET
INTERNAL DIEBOLD USE ONLY
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1. PURPOSE

This specification outlines the features and functionality for the Branch version of the **Diebold Digital Video Recorder (DVR)** family.

2. SCOPE

This document will define the functionality of the **Branch version of the DVR.** This document will include the potential features and functions, the system interfaces, and any performance requirements. **This document will not attempt to outline the implementation or phasing of the features described within.**

3. PRODUCT DEFINITION

The **Branch DVR** is a digital replacement for the Diebold analog video surveillance systems. The digital capture and storage of images will provide a flexible and reliable means of capturing surveillance events. The **Branch DVR** will be capable of monitoring ATM, branch and limited alarm activity. The **Branch DVR** software system will include web server software, which will provide a convenient means of remote communication to the **DVR,** as well as a consistent and easy to use user interface. The **Branch DVR** will store images on removable digital media, allowing the images to be viewed on a remote computer running web browser software. The **Branch DVR** will be fully programmable either locally or remotely via a remote computer running web browser software (See Figure 1).

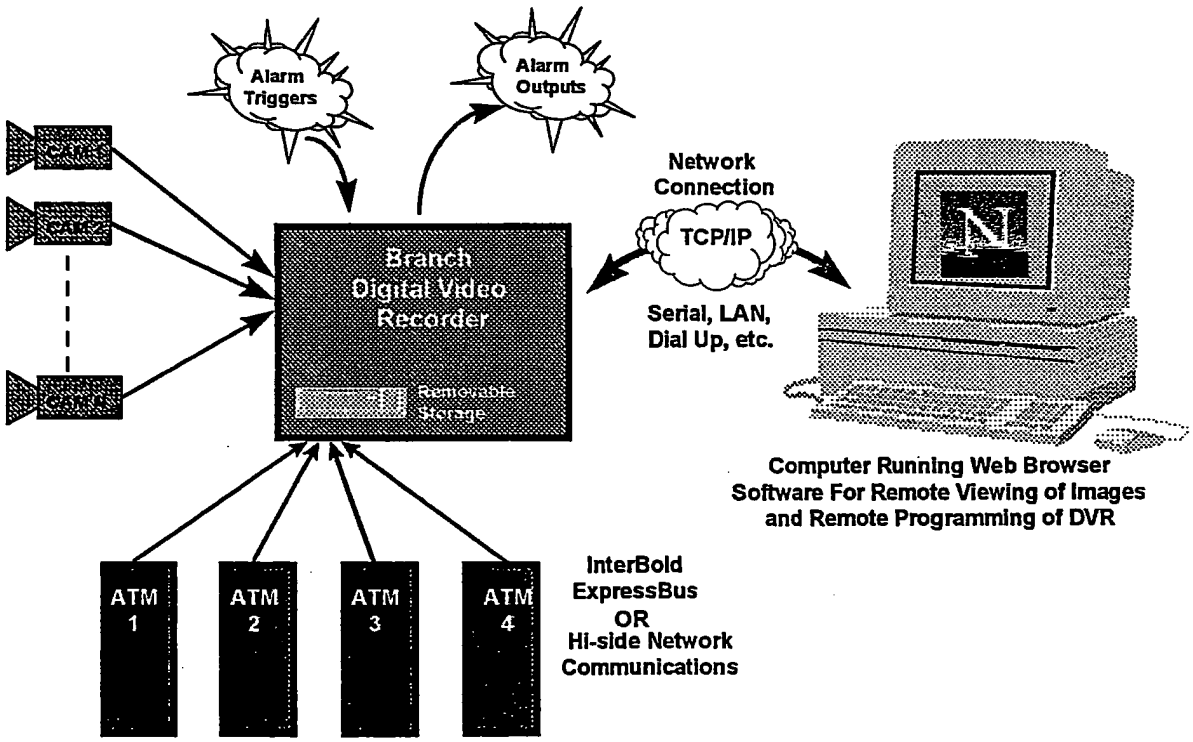

Figure 1

4. SYSTEM INTERFACES

4.1. HUMAN

The human interface will consist of an intuitive combination of controls and indicators that will reside either on the front panel of the **DVR** or through the web browser interface. At a minimum the following controls/indicators will be provided:

Question:

An intuitive combination of controls and indicators that will reside either on the front panel of the DVR or through the web browser interface. — How intuitive will be and how can SQA test those functions in SQA lab? What devices (in the figure 1) will we use in the DVR test?

straightforward

Control/Indicator
Power indicator
"Happy-Light"
Disk Status
Online/Communicating
Record/Capture
Eject
Stop
Play

The **Branch DVR** will also be equipped with a web based user interface via web browser software (e.g. Netscape Navigator). This will allow DVR programming and reviewing of images both locally (See Figure 2) and remotely on a networked computer (See figure 1).

Question:

What is the meaning of DVR programming of images locally and remotely? How can we test it?

clear

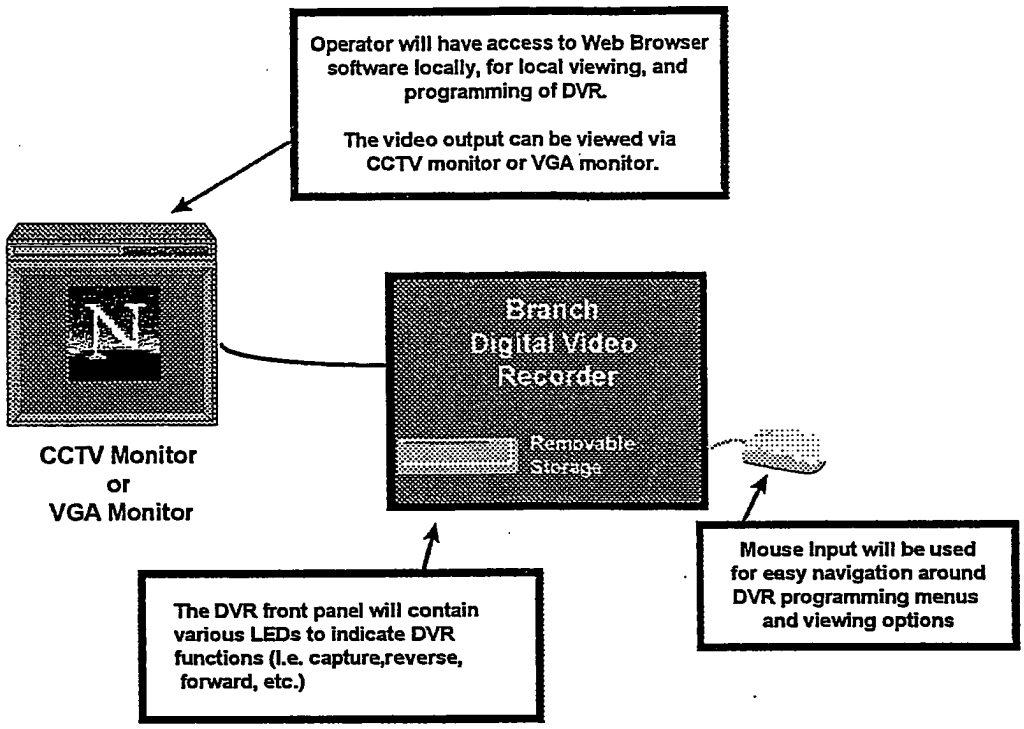

Figure 2

The **Branch DVR** will have multilingual support. The initial release of the **DVR** will be limited to English. Future releases of the **DVR** may be available in one or more of the following languages: Latin Spanish, French, German, Italian, Portuguese, Arabic, Russian and Chinese.

The **Branch DVR** will have online help and instructions available on the display, to aid in setting up and operating the system.

4.2. MECHANICAL

The **Branch DVR** will have a custom enclosure that is capable of housing PC compatible components. The **DVR** will be at the most, the size of current CCTV analog VCR decks. The enclosure will have flexible internal mounting brackets for removable media devices as well as future internal expansion.

4.3. ELECTRICAL

The **Branch DVR** will be 110/220 VAC 50/60Hz compatible. The **Branch DVR** will conform to UL Safety 1950 and CSA 950.

Question:

How can we conform those in DVR?

4.4. NETWORK

The **Branch DVR** will have a scaleable network interface allowing the unit to communicate over several network topologies. The interface will be scaleable via internal communications

cards as well as external adapters when necessary. The **Branch DVR** will need, at a minimum, interfaces to the following networks:

Connectivity Requirement	Interface
ExpressBus	RS485
Dial Up	Public Switched Telephone Network (PSTN) Modem ISDN
Serial Network Connectivity	RS232
LAN connectivity	Token Ring, 10 Megabit Ethernet
Hi-side Monitoring	RS232, LAN

Question:

The network topologies and the minimum interfaces need more explanations for us. Do we use Low-side ?

4.5. SOFTWARE

The **Branch DVR** will utilize off-the-shelf software "parts" when appropriate. This will speed development time and allow the development to be concentrated on the application specific sections of the software. Some of the software components that will be purchased, but not limited to, are as follows:

Question:

Can SQA have some more explanations about Network Protocols (Asynch. & Synch)?

Software Component
Web Server Software
Web Browser Software
32 bit Operating System
SQL Database Management
Networking Protocols (IP, Asynchronous, Synchronous protocols)

5. FEATURES

This section describes, in detail, the hardware and software features of the Branch Digital Video Recorder.

5.1. HARDWARE

5.1.1. VIDEO INPUTS/SWITCHING

A minimum of 4 composite inputs will be provided, via a software controlled video switcher. Video inputs can be added in increments between 4 and 8. This may be either an internal card (ISA or PCI) or an external video switcher controlled via a serial port. The option of either EIA/NTSC or CCIR/PAL inputs will be provided.

Some Video knowledge is expected!

Questions:

What are the composite inputs definition?
What is the Maximum of the composite inputs?
What is Software Controlled Video Switcher?
We need some more explanations for the following descriptions:
Video inputs can be added in **increments between 4 and 8**. This may be either an internal card (**ISA** or **PCI**) or **an external video switcher controlled via a serial port**. The **option of either EIA/NTSC or CCIR/PAL inputs** will be provided.
What are the definitions for EIA/NTSC and CCIR/PAL?

5.1.2. VIDEO OUTPUTS

At a minimum one composite video output will be provided. This will allow the connection of an optional analog CCTV monitor. An optional bridging monitor output will also be provided.

Questions:

What is the maximum of the composite video outputs?

What is the optional analog CCTV monitor and what is the optional bridging monitor output?

5.1.3. IMAGE PRINTING

The **DVR** will have the ability to print images locally via a PC compatible printer port. The **DVR** will take advantage of the operating systems print services for this function. System compatible printers will be evaluated and specified. Printers will be selected based on system compatibility, cost and quality of the printed image.

The **DVR** will have the ability to be connected to a CCTV video printer. This will more than likely be a connection to the video output port, allowing the displayed images to be printed.

Questions:

The **DVR** will have the ability to print images locally via a PC compatible printer port. **--Does this sentence talk about the port – LPT1?**

System compatible printers will be evaluated and specified. – **How many printers will be used in SQA testing? Are they all color printers?**

What is the CCTV video printer?

5.1.4. SYSTEM PLATFORM

The system platform will be a PC compatible platform, with the capability of running a 32 bit operating system. The following minimum system requirements will allow adequate performance of a 32 bit operating system along with the multimedia requirements of the system:

- Pentium 100 motherboard
- 32 Mb RAM
- 2 Gigabyte hard drive
- 3 ISA; 3 PCI and 1 shared ISA/PCI

Questions:
What are the multimedia requirements?

5.1.5. VIDEO FRAME GRABBER

The **DVR** will be equipped with a minimum of one video frame grabber. This will be at a minimum an ISA compatible card, but a PCI based card will provide the maximum performance.

Questions:

What is the maximum of the video frame grabbers?

How many will be tested in SQA lab?

Which Card will be use for the SQA testing ISA compatible or PCI?

What does The video frame grabber will be capable of a minimum of a 20 frames per second (fps) capture rate **really mean?**

How can SQA check the rate 20f/s and how can we compare with a full motion video?

The video frame grabber will be capable of a minimum of a 20 frames per second (fps) capture rate, which is comparable to full motion video.

5.1.6. HARDWARE IMAGE COMPRESSION

For performance critical applications, hardware image compression will be used. This will come in the form of a separate ISA or PCI based card, or if available, an integrated part of the frame grabber card.

Questions:

Lacks knowledge here

We need more explanations about this function!

What does hardware image compression will be used **really mean?**

Which one will be in using from those options –This will come in the form of a separate ISA or PCI based card, or if available, an integrated part of the frame grabber card?

5.1.7. ALARM INPUTS

The **DVR** will have a minimum of 4 alarm inputs. The alarm inputs will be internal to the **Branch DVR.**

Support for ATM panic button applications will be provided as alarm inputs as well.

Questions:
What is the maximum alarm inputs?
What are the categories defined for those alarms?
What does The alarm inputs will be internal to the **Branch DVR mean?**
How can we test this – Support for ATM panic button applications will be provided as alarm inputs as well **in SQA lab? Do we need the devices?**

5.1.8. ALARM OUTPUTS

The **Branch DVR** will have a minimum of 4 alarm outputs. The alarm outputs will be internal to the **Branch DVR.**

Questions:

Do we have the maximum for alarm outputs?

What does this – The alarm outputs will be internal to the **Branch DVR really mean? How do we test the function?**

5.1.9. DATA STORAGE DEVICES

The **DVR** will contain an internal hard drive for system files, logs and image caching. A removable data drive (e.g. ZIP drive, JAZ drive), will also be provided for all image storage and archiving. The removable drive will either be an IDE or SCSI compatible device mounted internal to the **DVR** enclosure.

Questions:
How many are "All" images?
SQA will test "JAZ full" and "JAZ not inserted"?

The **DVR** will have a 3 ½ floppy drive on the front of the unit, for **DVR** programming input, boot recovery and software updates. No image data will be stored on this device, it will only be used as a service tool.

5.1.10. COMMUNICATIONS

The **Branch DVR** will be equipped with several communications interfaces. These will allow direct communication with a remote viewing station, eavesdropping on ATM Lo-side and Hi-side communications and interface to the Teller line communications. The following are minimum interface requirements for a **Branch DVR** system:

Questions:

What are those communications' definitions of direct communication with a remote viewing station, eavesdropping on ATM Lo-side and Hi-side communications and interface to the Teller line communications?

Which one is being tested in SQA lab Lo-side? Or Hi-side? Lo-side is not mentioned in section 4.4—Network.

How can we test them in SQA lab?

- Public Switched Telephone Network (PSTN) Modem

  A PSTN modem will allow dial up communications between the **Branch DVR** and a remote viewing station. At a minimum the modem will be a 28.8 KBPS Hayes compatible internal modem. If an internal modem is not feasible (space constraints), an equivalent external version of the modem will be used.

- Token Ring or 10 Mb Ethernet Network Interface Card (NIC)

  An internal NIC will be provided where advanced protocols (TCP/IP) will be used to communicate to a remote viewing station, or to eavesdrop on an ATM's Hi-side communications network. At a minimum, the card will be ISA compliant.

  Questions:
  Can we have more explanations of this NIC function?
  Do we need to test this function in SQA lab?

- RS485 Interfaces

  The **Branch DVR** will have anywhere from 0 to 4 RS485 interfaces to allow the **DVR** to eavesdrop on the ExpressBus of up to 4 ATM's. This interface will be in the form of an internal ISA compatible card. The RS485 interfaces will only be used for eavesdropping, and will not have the ability to drive the line at all. This will provide some protection against "locking-up" the ATM's ExpressBus.

  Questions:
  How can we test this functions with 4 ATMs in SQA lab? Can we simulated the network traffic (like we do in D5100D sim test)?
  How can we test this function -- The RS485 interfaces will only be used for eavesdropping, and will not have the ability to drive the line at all. This will provide some protection against "locking-up" the ATM's ExpressBus ?
  Do we have to setup the test system with different communication interfaces?

- RS232 interfaces

  The **Branch DVR** will have at a minimum 1 RS232 interfaces and up to 5 depending on the application. The RS232 interfaces will allow remote connectivity to a remote viewing station, as well as provide an eavesdropping interface for up to four ATM's and an interface to Teller lines. The RS232 eavesdropping interfaces will allow the

Branch DVR to monitor the ATM's Hi-side communications for transaction information.

5.1.11. INDICATORS

The front panel of the **DVR** will have a two visual indicators to give feedback as to the status of system functions.

5.1.11.1. Hardware Indicators

- Power

The Power indicator will be illuminated when the **DVR** power is normal.

5.1.11.2. Software Controlled Indicators

- Happy Light

The Happy Light will give a quick indication as to system status. When the happy light is illuminated, the system is functioning satisfactorily. When the happy light is off, there is a problem with the **DVR**, which can be determined by running a diagnostic check on the system and viewing the system status on the **DVR**'s display.

Questions:
Is this – a diagnostic check on the system and viewing the system status on the **DVR**'s display **a software tool?**

- Capture Indicator

The Capture Indicator will be illuminated when the **DVR** is capturing an image and saving it to disk.

- Disk Status

The Disk Status indicator will visually inform the operator/user when the removable media is approaching full (e.g. 80% full), or when the disk is at maximum capacity.

Questions:
Which one is the final definition for Disk Status – when the removable media is approaching full (e.g. 80% full), or when the disk is at maximum capacity **?**
What is the near full condition (see below description)?
How is the disk status mapped to an alarm output?
Does the DVR system annunciates this condition by E-mail?

Disk status can also be mapped to an alarm output to annunciate either a full or near full condition.

The warning threshold for a disk low warning will be programmable from a minimum of 50% full to 95% full.
Questions:
Is 95% required to give the message?
Can we have some more explanation of the word 'programmable'?

- Online

The Online indicator will be illuminated when the **Branch DVR** is communicating with a remote viewing station.

5.1.12. SCALEABILITY/MODULARITY

The use of a PC compatible architecture will allow for flexible expansion of the **DVR** system. Expansion will be internal to the enclosure when feasible (not including cameras), however, for
Why?
larger systems it may be necessary to bring some expansion hardware out of the enclosure (i.e. switchers, removable data devices, etc.).

The **DVR** will be designed for maximum modularity. This will allow the system to be configured anywhere from a low-end (e.g. 4 video inputs, 4 alarm inputs, standalone), to a fully equipped **Branch DVR** (e.g. 23 video inputs, 8 alarm inputs, etc.), by use of expansion modules (in this case either additional PC cards, or external devices).

Questions:
How is the DVR system configured from a low-end .... To a fully equipped Branch DVR?
Why 4 video inputs, 4 alarm inputs, standalone?
Why 23 video inputs, 8 alarm inputs, etc. **?**

5.1.13. AUDIO

Optional Audio input capability will be provided by a PC compatible sound card (e.g. SoundBlaster). The audio function will be tied in with the image capture such that there is correlation with the captured images and the audio "track".

Questions:
What is the 'optional' mean here?
Does SQA need a SoundBlaster to test this function?

5.1.14. ENCLOSURE

The enclosure will be custom made and "non-PC" in appearance. The enclosure will house all the PC components where applicable. All indicators and controls will be located and clearly labeled on the front of the enclosure. Any connectors and external interfaces will be on the back of the unit.

The enclosure will have a footprint similar to that of analog VCR decks.

Questions:
What does this – a footprint similar to that of analog VCR decks **mean?**

5.1.15. DIGITAL CAMERAS

Digital Cameras will be specified when the PC interface and cost are feasible. Digital Cameras will eliminate the need for a frame capture card, but may require a separate interface card for the camera.
Questions:
Do we really use Digital Cameras in current Branch DVR system? If not, When the PC interface and cost are feasible? **How will SQA setup the test system?**

5.2. SOFTWARE

5.2.1. IMAGE CAPTURE

Digital images will be captured and processed locally. Processing will consist of compression, embedding of image security, linking of transaction or alarm data, and storage in a local database.

Questions:

Do we have interfaces or background tables or commands to test those 4 functions – compression, embedding, linking and storage? **What kind of Software do we use for execution?**

Can we have more explanation of the function – Picture quality adjustments, such as brightness, contrast, etc. will be programmable (on a camera by camera basis) **? What about Sharpness ?**

Image data will be stored along with the image, not embedded into the image. This will allow for higher compression ratios, as well as better data integrity.

Picture quality adjustments, such as brightness, contrast, etc. will be programmable (on a camera by camera basis).

5.2.2. IMAGE STORAGE/ARCHIVING

The captured images and data will be stored on the removable media as records in a database.

When a data cartridge is being replaced, the image data will be temporarily stored on the internal hard drive. Once the cartridge is replaced the images will be transferred to the removable cartridge.

Questions:
This will be a system stress test with 20 frames/second capture rate. What will happen if we will stress the Branch DVR system?

5.2.3. IMAGE SECURITY

Each image will be secured such that image tampering can be determined. The image security will not prevent the image from being viewed, just from being modified. The image security field is still pretty immature; therefore the software will be designed such that new image

security technologies can be easily integrated into the system. The following image security technologies are being considered:

- Digital watermark
- Digital signature
- Digital envelope/seal

The goal will be to utilize a security technology that is least invasive to the image, yet provides an ample amount of security.

Questions:
How can we test that image tampering can be determined ?
What image security technology are we using now in the DVR system?

5.2.4. SOFTWARE IMAGE COMPRESSION

Software image compression will be used in situations where hardware based compression is not required to meet performance needs. Software compression libraries will be purchased, and the software will be designed to allow easy integration of new compression technologies as they are developed. The following image compression technologies are being investigated. One will be integrated into the **DVR** system:

- Wavelet - commercial libraries available
- JPEG - public domain algorithms available
- Fractal - commercial libraries available

These are all lossy compression technologies (Image quality is reduced with higher compression ratios), however to provide an efficient form of image archive and storage this will be necessary. JPEG provides somewhat of an industry "standard", however wavelet technology provides much higher compression ratios with less loss than JPEG or Fractal.

Questions:
Can we have more explanation of that Software image compression will be used in situations where hardware based compression is not required to meet performance needs ?
Which image compression technology are we using in DVR system? JPEG or Wavelet?

5.2.5. PROGRAMMING/SURVEILLANCE SCHEDULING

The **Branch DVR** will have flexible programming to allow setting of various system functions and operations. The **DVR** will have the ability to be programmed locally as well as remotely via a remote viewing station. This section will detail the programming and surveillance functions of the **Branch DVR.**

Questions:

How do we test the local and remote programming ability ?

Where can we find or get those data as following mentioned to set up SQA test system?
What are the settings for Communications settings and ATM interface settings?

Does SQA need to order or setup a simulated or real ATM interface for the DVR testing?

- Communications settings (Lo-side, Hi-side, remote viewing station)
  - baud rate
  - telephone numbers (up to 10)
  - data bits
  - stop bits
  - parity
  - Synchronous, Asynchronous
  - RTS, CTS, DCE, DTE settings
  - Communications port (i.e. com1, com2)
  - ASCII/EBCDIC
  - TCP/IP settings

- ATM interface settings
  - ATM ID/address
  - Message Formats
    - Diebold 911/912
    - NCR Native
    - IBM 473X
    - ExpressBus

  - Transaction Capture setup
    - Card Data
    - Account info
    - Devices on which to capture

  - ATM Network Protocols
    - SDLC
    - TC500
    - IBM 3275
    - Express Bus

- Camera Sequencing (normal sequencing)
  - Camera by Camera setup
  - Up to 23 cameras in sequence
  - Camera can be "on" for a number of frames or amount of time
    - Camera programmed for up to 10 consecutive frames.
    - Camera programmed for up to 10 seconds of capture.
  - Camera can be placed anywhere within sequence, and multiple times within sequence.

Questions:
How many cameras do SQA need to test the DVR system according to the description -- "Camera by Camera setup", and "Up to 23 cameras in sequence?
How does the 20 frames/second capture rate relate to
Camera programmed for up to 10 consecutive frames,
Camera programmed for up to 10 seconds of capture?
"Camera can be placed anywhere within sequence, and multiple times within sequence" **Any standards for the sequence and multiple times ?**

- Alarm Sequencing
  - Unique Sequencing per alarm input (hard or soft alarms)

- Up to 23 cameras in sequence
- Camera can be "on" for a number of frames or amount of time
  - Camera programmed for up to 10 consecutive frames.
  - Camera programmed for up to 10 seconds of capture.
- Camera can be placed anywhere within sequence, and multiple times within sequence
- Maintain sequence for duration of alarm contact, or set amount of time
- Programmable number of saved images both pre and post alarm

Questions:
Will each camera action be an Alarm?
Can we have more explanation of Maintain sequence for duration of alarm contact, or set amount of time **and** Programmable number of saved images both pre and post alarm**?**
What is the limit for the programmable number of saved images both pre and post alarm?

- Sequencing Schedules
  - Maximum of 7 time schedules per day **How is this defined ?**
  - Auto Daylight savings time adjustments **What does this mean ?**
  - Schedule ID's **Number? Name? Or Both?**

- Camera ID's **Definition ?**
  - By default camera will be identified by it's video input number **How is the video input number defined ?**
  - Can give each camera a unique name up to 32 characters
  - Camera identified by number, name or both
  - Duplicate name check
  - Camera can be referenced by name or number

- Motion Detection settings
  - Programmable detection zone
  - sensitivity settings (high to low sensitivity)

  Questions:
  What is the definition of Sensitivity settings ? Brightness? Move speed? Sharpness?
  How can we check the programmable detection zone?

- Date/Time setup
  - Auto daylight savings time adjustments (programmable on/off)
  - Date format
    - MM-DD-YY
    - DD-MM-YY
  - Time Format
    - 12 hour
    - 24 hour
  - "Lock" on ATM's time/date

Questions:
Do we use '00' to indicate Year 2000 or not ?
What does "Lock" on ATM's time/date really mean to SQA test ?

Do we have the Audio input to test in SQA lab?

- Audio Setup
  - One camera linked to audio input
  - Capture audio on alarm sequencing
  - Capture audio during normal sequencing

- Operator enrollment
  - Operator name
  - Operator password
  - Operator privileges

- Image compression "ratios"
  - Maximum quality vs. Maximum storage — **What is this mean and what is the limit?**
  - Lower compression ratios for alarm sequencing — **What is the definition of Lower Compression ratios?**
  - Programmable on a camera by camera basis for both alarm and normal sequencing — **What will happen if use abnormal sequencing?**

- Video output — **Where can view the video output ?**
  - Single camera output
  - Follow sequencing of cameras
  - Follow alarm sequencing — **What will happen if not follow those sequencing ?**

- **Image Storage and Archiving**
  - Automatic data overwrite/deletion — **How many days or hours images can be stored or archived before overwrite or deletion ?**
    - By date
    - By number of images
    - By event — **Are there priorities related Events ?**
    - By camera
  - Log File archiving functions
  - Ability for alarm events to overwrite other events, except events of equal priority, so that alarm events cannot be lost — **What are other events and what does equal priority mean?**
  - Log file overwrite/deletion functions — **What is the conditions for overwrite/deletion functions?**
  - Image/Data deletion protection
    - By expiration date
    - By event
    - By camera

- Local Configuration
  - Interface to DVR menus through local web browser — **Talk about online help?**

- Ability to copy programming data to disk — **What is programming data?**

- Pre-programmed "scripts" — **What are Pre-programmed "scripts"? How can we test them ?**

Pre-programmed scripts or **DVR** programs will be available locally for typical surveillance applications (i.e. convenience stores, ATM vestibules). The scripts will be based on typical hardware configurations, and can be customized to the application.

Need more explanation of this function.

- Automatic archiving of **DVR** programming data — **Need more explanation.**

The **DVR** will have the ability to "save-off" its programming data to removable media each time the cartridge is replaced. This will act as an automatic backup of the system's programming in the event the **DVR** becomes inoperable and needs replacement or the programming data becomes corrupted.

- Download of programming data from remote viewing station

All programming data can be downloaded to a **Branch DVR** from a remote viewing station. The download of the data will be initiated by the remote viewing station. Data integrity checks will ensure that the data arrived intact and programming of the **DVR** was successful.

Questions:
What kind of software tool does the Data integrity checks mean?
Do we need to send some "bad data" to test this function?
How many Branch DVRs will need to be setup for SQA test?

- Download of programming data from **DVR** floppy drive

The **Branch DVR** programming can be copied or "downloaded" from the 3 ½ floppy drive on the unit. The source of this programming can either be from the remote viewing station or another **DVR**. This will allow quick programming of **DVR** units with common programming.

5.2.6. ALARMS

Both hard and soft alarm inputs will be used to trigger image capture. Hard alarms will come from an alarm I/O card or external trigger source. Soft alarms may come from, but are not limited to :

- Video motion detection,
- "Hot" card detection
- Loss of video detection
- Black level detection (i.e. camera covered with hand)

Programmable compression ratios for alarm events will allow improved image quality during alarm situations. The number of frames saved before and after alarm events will also be a programmable feature.

All alarm data will be logged to a separate log file. The following data will be saved as part of an alarm event:

- Date/Time
- Alarm source
- Transaction information (if available)
- Captured Image file name
- Alarm Type
- Location

The **Branch DVR** will have the ability to annunciate alarm conditions to remote computers via E-mail.

Questions:
What is an alarm I/O card or external trigger source **?**
We need explanation of the following functions: Video motion detection, "Hot" card detection, Loss of video detection and Black level detection (i.e. camera covered with hand).
How can we test them?
What is that Programmable compression ratios for alarm events will allow improved image quality during alarm situations. The number of frames saved before and after alarm events will also be a programmable feature **mean ?**
What is the range of The number of frames saved before and after alarm events **?**

5.2.7. DIAGNOSTICS

The **DVR** will maintain a series of diagnostic log files to aid in servicing the system. The following are some of the log files that will be generated.

- Boot data — **What is "Boot Data"?**
- Disk status
- Power — **What should we look for?**
- Error Status — **How can we do System Error Check test?**

The log files will be viewable locally via the CCTV monitor, as well as remotely via a remote viewing station.

The **DVR** will be in a constant "self diagnostic" mode to detect any system errors and problems. Any status changes will be reported on the front panel of the **DVR** and, if installed, a monitor connected to the **DVR**. System problems will also have the ability to be reported to a remote viewing station. The following are some of the diagnostic functions that will be monitored:

- Disk level diagnostics
- PC based diagnostics (memory, I/O)
- Communications diagnostics
- Frame grabber diagnostics
- Removable media diagnostics
- Video diagnostics

- Print diagnostics
- Software subsystem diagnostics, such as database corruption, etc.

Questions:
How do we check all those system problems?
What the following function really mean and how does SQA test it ?

There will be a "one-button" access to the **DVR** diagnostics giving an easy means of accessing more common system statuses.

The **Branch DVR** will have the ability to annunciate diagnostic information via E-mail to remote computers and users.

5.2.8. REMOTE COMMUNICATIONS

The **Branch DVR** will have the capability to communicate remotely with a computer running web browser software, such as Netscape Navigator or Microsoft Internet Explorer. This will allow the control of many operational and support functions of the **Branch DVR.** These functions will include:

- Transmission of images and data
- Software updates to the **DVR**
- Downloading of programming data
- Diagnostic access/remote control

Questions:
What is Diagnostic access/remote control **?**

The **DVR** will have the capability of connecting to the remote viewing station either via direct communications (RS232, LAN), or via dial-up connections, depending on the application.
Which one will be used in the test?

The level of communication between the **DVR** and the remote viewing station will be programmable. This will include set up of "Batch" transmission of images and data in off-peak hours, unsolicited transmission of images and data upon the occurrence of events (e.g. alarms), and the remote storage/archiving of **DVR** images and data.

The **DVR** will have the ability to send "live" video streams to the remote viewing station upon request. The quality of the video will be dependent upon the communications connection being used.
What does '"live" video streams' mean and how do we generate the streams?
What communication connection will be used in DVR team or SQA?
What is DES and what is PGP?

The connection between the **Branch DVR** and the remote viewing station will utilize some form of line security (e.g. DES, PGP), to discourage eavesdropping or line substitution.

5.2.9. DATABASE

The captured images and data will be maintained in an SQL (Structured Query Language) database. This database will be a 3rd party off-the-shelf software package that has the ability to handle complex data types, like images.

What is the software 3rd party off-the-shelf software package that has the ability to handle complex data types, like images. **??**

The interface to the database will be designed to allow easy integration of various database engines, for maximum flexibility. The interface will also be designed to allow the easy integration of additional database fields.

What is the interface "The interface to the database will be designed to allow easy integration of various database engines, for maximum flexibility. The interface will also be designed to allow the easy integration of additional database fields" **?? How can we test this??**

5.2.10. ATM SOFTWARE INTERFACE

When interfaced to an InterBold ATM the **DVR** will make use of the ExpressBus interface to trigger image capture. The **DVR** will eavesdrop on the ExpressBus, and will not be an active device on the line. The **DVR** will monitor data from the card reader, depositor, dispenser, journal printer and consumer printer. The following is some of the data that can be captured and stored with the images:

Questions:
What is ExpressBus interface**??**
What does this "The **DVR** will eavesdrop on the ExpressBus, and will not be an active device on the line" **mean?**
What is Hot card information?
Need more information about ATM as following described.

- Time and Date
- Transaction Number
- Hot card information
- Location Information
- Account Number
- Amount of bills dispensed

In non-InterBold applications or in situations where the ExpressBus is unable to be used, an interface to the Hi-side communications will be utilized. Diebold 911/912, NCR Native and IBM 473x message formats will be supported to trigger image capture. Support for several of the ATM network protocols will be supported as well. This will include:

- Async
- BiSync
- SDLC **What does this stand for?**

The **DVR** will have the ability to "auto-configure" itself to the Hi-side and Lo-side communication settings (i.e. baud rate, data bits, etc.). The **DVR** will have the ability to manually configure the ATM network communication parameters as well.

The **DVR** will be designed to allow for integration of new Hi-side as well as Lo-side interfaces and protocols, as ATM architecture changes. **What does this mean??**

5.2.11. IMAGE MOTION DETECTION

Image motion detection will be provided via software algorithms. A programmable motion "zone" will be provided to only detect motion in relevant areas on the image. The sensitivity level of the motion detection will also be a programmable item.
What are the relevant areas on the image?
How do you define the sensitivity level??

5.2.12. SECURITY

The **DVR** will have a number of security measures built into it to restrict access to only authorized users/operators. The **DVR** will have a finite number of operators/users that can be programmed into the system. The following are some of the security measures that will be used:

- Password protection

  The **DVR** will have operator login id's unique to each operator, administrator and service person. User passwords will be entered from the **DVR's** GUI. Up to 25 operators can be programmed into the **DVR** system.

- Operator privileges

  Every valid operator on the **Branch DVR** will have a finite number of "privileges" that will give the operator access to only the functions that have been programmed for them. Every **Branch DVR** will have one "super-user" that has all privileges and can assign all privileges. The following are some of the programmable privileges that will be included in the **Branch DVR**.

  - Operator programming/enrollment — **What does this mean??**
  - File deletion cartridge re-use. — **How can we test this function??**
  - Image viewing
  - cartridge replacement
  - **DVR** programming (schedules, alarms, etc.).
  - Diagnostic functions
  - **DVR** security programming
  - **DVR** service — **Can we have Explanation**
  - Communications settings

5.2.13. PLAYBACK/REVIEW

The **Branch DVR** will be capable of a full selection of playback and review capabilities. The images and data will be viewable on a CCTV or VGA monitor attached to the **Branch DVR** or through the web interface and remote computer. The **Branch DVR** will have the ability to sequentially display the stored images, either one image at a time, slow forward, fast forward, slow reverse and fast reverse. The **Branch DVR** will also have a selection of rapid search and retrieval functions at its disposal. The following are features of the DVR's playback and review capabilities:

- Single camera playback/multiple camera playback

The operator will be able to select the camera in which to view stored images, or the operator can sequence through the images of all the cameras.

- "Looped" playback **Can we have more explanation of "looped" ?**

A series of images can be continuously played back or "looped" for the user.

- Thumbnail images

All images captured by the **Branch DVR** can be displayed in thumbnail format. This will enable more images to be viewed at one time. The user will be able to click on any of the thumbnails to view them in more detail. User-specified criteria will also be available to limit the number of thumbnail images displayed at one time.

- Manual Record Functionality

How do we test the manual record functionality?

From a remote computer, a user will be able to direct the **Branch DVR** to begin capturing images. Capturing will be done according to either default or user-specified criteria (camera sequencing, capture rate, etc.). Capturing can begin immediately or delayed (for a programmable amount of time or time of day). Similarly, image capture will end at either a specified time of date, length of time, or upon a user-specified command. Additionally, an authorized user will have the ability to designate whether alarm/event image capturing overrides the manual recording or vice versa.

- Image Enhancements

A user at a remote computer will have the ability to perform various image enhancements on the captured images. Adjustments for brightness, contrast, hue, sharpness, etc. will be included. The ability to "zoom-in" and "zoom-out" on areas of an image will also be included. More advanced features, such as edge detection/enhancement, image smoothing, histogram equalization, etc., will also be available. This may be accomplished with an optional 3rd party software package.

How do we test those advanced features edge detection/enhancement, image smoothing, histogram equalization and etc.?
What is the software of "an optional 3rd party software package" ??

- Pertinent image data

What is PERTINENT IMAGE DATA?
How do we test the function?

Any pertinent image data will be displayed along with the stored images. The data displayed and the format of the data will be programmable. Some of this data will include:

- Time/Date stamp
- Transaction data
- Camera Number/Name
- Account data

EXHIBIT E

INTER-OFFICE MEMO

To: Distribution *Date:*

From: Jeff Enright

Subject: Digital Video Monthly Status Meeting –

Purpose:

The purpose of this meeting was to organize a cohesive Project Team to help bring the forthcoming DVR Product to Market. This was the first time the entire Project Team was to be given a Demo of the actual Product.

Intro:

Kevin began the meeting with organizational details. Minutes will be rotated with Jeff volunteering for this first meeting of . Future meetings will be the Third Monday of the month at 8:30 a.m. in Canton Conference Room SPG #3.

Review Overall Development:

Mike and Jeff explained how the Project was going with emphasis on the critical Bank of Hawaii Demo to be conducted on It stated that all Hardware was going quite well and most Software was on schedule with a challenge area being the Operator Interface.

Selection of Names:

Mark Radke provided a list of potential Product names and asked for feedback on these candidates by Mark will summarize and report at next meeting. We will be naming both the overall product and also one specific feature which will detect loss of "good " video.

Partnerships for Customer Feedback:

Kevin explained that we have 5 potential Customers who may agree to participate as a partner with us testing Alpha units. These Alpha units would have very limited SQA and could be modified in the field with very little inertia. The purpose of these units would be to allow rapid deployment of changes required based upon these early experience users. This needs to be managed very carefully to assure that features added are truly needed for the product and not just to satisfy one customer's fancy.

The first Alpha site will most likely be Bank of Hawaii in the end of time frame.

Demonstration of Software Product

Mike Russell led a very informative demo of the actual DVR Product image retrieval capability via the Image Search function. This provided a very good foundation to all Project Team members to assure a common vision of this product as we prepare to release and launch.

The system topology as well as the utilization of web browser concepts was conveyed to all attendees.

Several very good questions and suggestions came out of this interactive demonstration.

Lab Tour and Hardware Demo

Jeff led the Team through the Engineering development labs and showed all DVR hardware progress to date. Much time was spent explaining the functions of the two internally developed VIA and VAC boards. Again several very good questions and suggestions came from this interaction.

Forward Development Plan

Kevin led a recap of the Product development to date and stressed that much has to be accomplished by this team in the next few months ahead. It was mentioned we are still on schedule for a Product by the end of Second Quarter.

Next Meeting

The next meeting is

Thanks for your participation and interest,

Jeff Enright

DIEBOLD

Canton, Ohio

Mr. Ralph Jocke
Water & Jocke
231 South Broadway
Medina, Ohio 44256-2601

ATTORNEY-CLIENT COMMUNICATION / PRIVILEGED AND CONFIDENTIAL

SUBJECT: **AccuTrack Patent Interest**

REF: **Patent Investigation Meeting**

Dear Ralph:

Attached are the overheads used at our meeting describing our Digital Video Recorder (DVR) development hereafter referred to as AccuTrack. This provides a functional block diagram of the various portions of the AccuTrack Product.

As a result of our meeting and much subsequent discussion, we would like to pursue patents for the following:

- Remote Access to Acquired Images – This is done via any IP network. Our current focus is Intranets, but we must protect Internet access as well. Optional Dial-up capability is also provided.
- Internet/Intranet DVR Appliance
- Non-Proprietary Retrieval Device – Our remote search capability is performed by any Internet capable client running industry standard Internet browser Software.
- Security Access - Currently we are relatively simple Password based. This may need to become more sophisticated and at that point might be patentable.
- E-Mail Alarm Messaging with associated logic which allows the user to filter which exact types of alarms should transmit E-mail.
- Alarm Triggering – We have a multitude of ways to trigger an image capture sequence. The method and associated logic to detect hardware alarms, motion alarms, non-useable video alarms, transaction based alarms, etc. Also , triggering only for transactions of a certain value or greater (i.e. >$100.00)
- Loss of Useable Video -- This will detect a camera blocked or painted lens situation. This feature will probably have a trademarked name as well.
- Image Security – We plan to Message Authenticate the image. Most Image Security schemes are interested more in Copyright protection. We are more interested in image authentication which would allow us to be sure that the image as captured has not been modified since capture and initial storage. I suppose we could coin a new name for this, possibly Image Authentication Code (IAC).
- ATM Servicer Fraud – By configuring this system to detect when the unit is being serviced and by triggering image capture at this time, a much higher level of fraud deterrence is possible.

The unique hardware portion of Accutrack includes 2 Circuit Card Assembly (CCA) with the following features:

- VIA Board – Ability to remote a group of 12 Cameras with associated 4 alarm inputs and 4 relay outputs. Selection of specific camera and control of the I/O is controlled via a twisted pair. One Coax cable is required to bring the selected video signal back.
- VAC Board – Several Functions are combined on this one CCA; Watchdog circuitry, Serial control for 2 VIA boards (including video switching, digital input and digital(relay) output control), 4 Serial Ports for transaction monitoring, Control of Front panel indicators and switches.

I believe that we determined that these boards are most probably not patentable. I include them here for one last look.

In addition, we would like to pursue a few Design Patents :

- Primary Search Screen
- Primary Configure Screen
- Primary Welcome Screen
- Computer Based Training Entry Screen

Some of the novel features of the Accutrack System are:

- Web-based Server/Browser Technology
- Local storage of images with very smart Remote retrieval
- Triggering of Image Capture by a variety of means
- Built-in Motion Detection
- Built-in Loss of Useable Video Detection
- Image Security

We are planning to announce to the general public at the ASIS show the week of
There are currently two Alpha sites under non-disclosure running prototype Systems.
A pre-announcement for this product to our sales team will probably precede the ASIS show in

Please advise of the next step in pursuing the above patents.

Sincerely,

Jeff Enright

attachments

cc:	Brad Stephenson	E-89-E
	Mike Lindroos	9-C-28
	Kevin Martin	E-89-E
	Mike Russell	E-68